

INDEX

Volume 18 numbers 1-10 January/February — December 1986

SUBJECT INDEX

A

A matrix approach to the analysis of recursively generated B-spline surfaces 437
Acceleration of sequences 219
Adaptation transients 219
Adaptive control 219
Adaptive subdivision algorithms for a set of Bezier triangles 74
Algorithms 74, 79, 95, 102, 186, 275, 411
ALG: a model for generating alternative layout graphs under architectural constraints 431
An algorithm for silhouette of curved surfaces based on graphical relations 95
An introduction to computer graphics 161
Applications of power series in computational geometry 514
Applying relational database techniques to solid modelling 319
Architectural design 431
Architecture 83
Automated design of MOS circuits and layout 489
Automated symbolic layout 489
Automatic interpretation of engineering drawings for 3D surface representation in CAD 156

B

Backface elimination 533
Bernstein-Bézier triangular patches 45
Bézier curves 525
Bézier points 105, 186
Bézier triangles 74
Bias approach 48
Bicubic patches 45
Bivariate polynomials 529

BOOKS AND PUBLICATIONS

Ammeraal, L Programming principles in computer graphics 502
Architecture Technology Corp. The Ethernet type local networks report 110
Arthur, P CAD/CAM training and education through the 80's 114
Barrett, R, Ramsay, A and Siomon, A PDP-11 a practical language for artificial intelligence 289
Berger, Marc Computer graphics with Pascal 290
Besant, C B and Lui, C W K Computer-aided design and manufacture 234
Brady, M, Gerhardt, L A and Davidson, H F (eds) Robotics and artificial intelligence 289
Brebbia, C A (ed) Boundary element techniques in computer-aided engineering 117
de Casteljau, Paul Shape mathematics and CAD 458
Connolly, J V The way ahead 111
Conte, G and del Corso, D (eds) Multi-microprocessor systems for real time applications 111
Dahlstrand, Ingemar Software portability and standards 117
Dept of Trade and Industry Guidelines to finite element practice 110

Enderle, G, Kansy, K and Pfaff, G

Computer graphics programming 111
Fitch, J (ed) EUROSAM 84: international symposium on symbolic and algebraic computation 110
Foundry, C, Jenkins B, Kam, G and Murphy, R (eds) CAD/CAM CAE: survey review and buyer's guide 111
Friedman, A D Fundamentals of logic switching theory 111
Fuchs, Henry (ed) 1985 Chapel Hill Conference on very large scale integration 234
Fujiwara, Hideo Logic testing and design for testability 289
Gardan, Y Mathematics and CAD: numerical methods for CAD 289
Gehan, N C for personal computers 110
Haigh, M J An introduction to computer-aided design and manufacture 114
Jiafu, Yang (ed) Computing in civil engineering: proceedings of 2nd international conference 115
Katz, R H Information management for engineering design 291
Leininger, G G (ed) Computer-aided design of multivariable technological systems 111
Lloyd, J W Foundation of logic programming 110
Lobell, R F Application program generators 110
Medland, A J and Burnett, P CAD/CAM in practice 502
Merris, R Introduction to computer mathematics 111
Mortenson, M E Geometric modelling 503
Myiroi, M G and Calvert, G (eds) Measurement and instrumentation for control 402
Paradaens, J (ed) Automata, languages and programming 110
Preston, E J, Crawford, G W and Coticchia, M E CAD/CAM dictionary 289
Ranky, P G and Ho, C Y Robot modelling, control and applications with software 113
Rembold, U, Blume, C and Dillmann, R Computer integrated manufacturing technology and systems 290
Roubens, J and Renaert, J F (eds) Esprit '84 - status of ongoing work 115
Scrivener, S A R Computer-aided design and manufacture 402
Skvarcius, R and Robinson, W B Discrete mathematics with computer science applications 291
van de Snepscheut, Jan L A Trace theory and VLSI design 289
Uhr, L Algorithm structured computer arrays and networks 111
Vandoni, Carlo Eurographics 85: Proceedings of the European Graphics conference 289
Wallace, Thomas MRPII: making it happen 289
Wallis, P J L Ada software tools interfaces 111
Warnecke, H-J and Steinhilper, R Flexible manufacturing systems 458
Wix, J and McLellan, C Data exchange between computer systems in the construction industry 503

Boolean evaluation 533

Boundary representation 3
Boundary to constructive solid geometry mappings: a focus on 2D issues 3
BUILD 546
B-spline 38

C

Calculations of the radiation configuration factor using ray casting 371
CASE: automatic generation of electrical diagrams 356
Compaction 367
Comparison of three curve intersection algorithms 58
Computer graphics 371, 539
Computer modelling 431
Computer technology 242
Computer-aided design for a real-time acceleration of the convergence of adaptive control algorithms 219
Computer-aided design of robotic manipulators 139
Computer-aided fatigue analysis 263
Computing 367
Computing technology 371
Construction of curves and surfaces using numerical optimization techniques 15
Constructive solid geometry 147, 533
Control 552
Converting standard bivariate polynomials to Bernstein form over arbitrary triangular regions 529
Coons patches 45
Curvature continuous curves and surfaces 105
Curve 514
Curve and surface design 361
Curve fitting algorithm for rough cutting 79
Curve intersection 58
Curve tracing 514
Curves 3, 15, 22, 29, 48, 79, 105, 193

D

Data modelling 257
Database design 257
Databases 132
Design 83
Design knowledge in architectural CAD 83
Design of axial turbomachine blade camber surfaces using the Bézier technique 316
Developments in computer-aided control system design 552
Differential analysers 424
Drafting 156

E

Electrical circuit diagram generation algorithms 356
Engineering databases 257
Entity-relationship model 207
Expert system 497
Expert systems applications in computer-aided design 546

F

Fast structured logic 478
Fatigue 263

F
 Finite element applications 29
 Finite elements 263
 FSL: a fast structured logic design methodology for high speed GaAs digital integrated circuits 478
 Functional specification for CAD databases 132

G
 Generalized integrators 424
 Generating wireframes from set theoretic solid models by spatial division 307
 Generation of continuous smooth curves resulting from operations on parametric surface patches 193
 Generation of high order surfaces over arbitrary polyhedral meshes 411
 GEODERM: geometric shape design system using an entity-relationship model 207
 Geometric continuity 514
 Geometric database 207
 Geometric modelling 443, 539
 Geometrical design rule checker 380
 Geometry 29, 33, 38, 45, 48, 53, 58, 79, 102, 105, 147, 193, 525, 529
 Graphics 161

H
 Hidden surface algorithms 533
 Hierarchical design 367
 Hierarchical timing verification 467
 Hierarchical timing verification system 467
 Hyperbolic functions 53

I
 Improving the efficiency of scanline algorithms 91
 Incremental generalized integrator 424
 Inputting constructive solid geometry representations directly from 2D orthographic engineering drawings 147
 Integrated circuit design 481
 Integrated circuit design methodology 478
 Integrated circuit technology 472, 478, 481
 Integrated injection logic 472
 Interpretation 156
 Intersection 186
 Intersection of parametric surfaces in the Bernstein-Bézier representation 186
 Intersection problems 514

K
 Knowledge engineering environment 497
 Knowledge-based systems 83

L
 Lagrange interpolation 525
 Layout graphs 431
 Linear time geometrical design rule checker based on quadtree representation of VLSI mask layouts 380
 Lines 79
 Link between Bézier and Lagrange curve and surface schemes 525
 Linking plate/shell finite element analysis and engineering drafting by meshed surface modelling 327
 LSI layout 367
 LSI layout using hierarchical design with compaction 367

M
 Manufacturing system 242
 Manufacturing systems simulation using DSSL 242
 Mathematical modelling 3, 15
 Mathematics 48, 74, 79, 91, 95, 525, 529
 Methodology for the design of databases for engineering applications 257
 Modelling and simulation of integrated circuits 472

MOS circuit design 489
 Multivariate spline methods in CAGD 102
 Multivariate splines 102

N
 N sided patches 38
 Natural bias approach to shape preserving curves 48
 Numerical estimation of the curvature of surfaces 33
 Numerical methods 33
 Numerical optimization techniques 15

P
 Parabolae 29
 Parabolic curve approximation in design and finite element applications 29
 Parameterization in grid generation 22
 Parametric surface patches 193
 Parametric surfaces 186, 224
 Patches 224
 Path programmable logic 481
 Piecewise triangular C surface strips 45
 Polygons 275
 Power series 514
 PPL integrated circuit design methodology 481

Q
 Quadratic blending surfaces 301
 Quadtrees 380

R
 Radiation configuration factor 371
 Rational Bézier scheme 361
 Rational curves 58
 Recursion 361
 Representation of rational Bézier curves and surfaces by recursive algorithms 361
 Robotic manipulators 139
 Rule-based expert system shells 546

S
 Scan-grid approach 275
 Set theoretic operations on polygons using the scan-grid approach 275
 Shape preserving spline interpolation 53
 Shape-shape interactions 91
 Silhouettes 95
 Simulation 242, 472
 SML 443
 SML: a solid modelling language 443
 Smoothing 224
 Smoothing of shapes designed with free-form surfaces 224
 Software 552
 Solid modelling 3, 533
 Some negative results in N sided patches 38
 Specification of CAD databases 132
 Splines 105
 Spline-under-tension 53
 Stress analysis 263
 Supercomputers 539
 Surface curvature 33
 Surface modelling 156
 Surfaces, 15, 411
 System design 552

T
 Tangents 48
 Techniques for reducing Boolean evaluation time in CSG scan-line algorithms 533
 The application of CAD/CAM techniques at Harland and Wolff 280
 The definition and computation of a metric on plane curves 25
 Transmission design 263
 Triangular patches 529
 Two dimensional orthographic drawings 147

U
 Unified interactive geometric modeller for simulating highly complex environments 539
 User interface 443
 User interface 539
 User programming language 450
 Using CAD macros and languages for productivity on a Unigraphics system 450

V
 VLSI circuit design 467
 VLSI wiring 497

W
 Wirability expert system 497

AUTHOR INDEX

A
 Abrailis, Liudvikas and Barila, Arvydas LSI layout using hierarchical design with compaction 367
 Anderson, David C
 see Waggoner, Warren N
 Aoudja, Ferid, Laborie, Marc and Saint-Paul, Andre CASE: automatic generation of electrical diagrams 356

B
 Baart, M L and McLeod, R J Y Parabolic curve approximation in design and finite element applications 29
 Bailey, Michael J
 see Maxwell, Gregory M
 Ball, A A and Storry, D J T A matrix approach to the analysis of recursively generated B-spline surfaces 437
 Barila, Arvydas
 see Abrailis, Liudvikas
 Barry, Phillip J see Farin, Gerald
 Beeker, Etienne Smoothing of shapes designed with free-form surfaces 224
 Benayoun, Mohammed and Preece, Paul E Methodology for the design of databases for engineering applications 257
 Bin, Ho Inputting constructive solid geometry representations directly from 2D orthographic engineering drawings 147
 Boehm, Wolfgang Multivariate spline methods in CAGD 102; and Curvature continuous curves and surfaces 105
 Bonfiglioli, Luisa An algorithm for silhouette of curved surfaces based on graphical relations 95
 Brock, Philip J, Polinsky, Alan J, Slivka, Rebecca and Greenberg, Donald P Unified interactive geometric modeller for simulating highly complex environments 539
 Bronsvoort, Willem F Techniques for reducing Boolean evaluation time in CSG scan-line algorithms 533
 Brown, A D and Thomas, P R Improving the efficiency of scanline algorithms 91
 Bryant, P K and Muroga, S Automated design of MOS circuits and layout 489

C
 Cartwright, W G
 see Ntoko, Nzumbe-Mesape
 Chaharbashi, K and Davies, B L Manufacturing systems simulation using DSSL 242
 Chan, K C see Tan, S T
 Chen, C see Reddi, R

D
 Davies, B L see Chaharbashi, K
 Douglas, R B The application of CAD/CAM techniques at Harland and Wolff 280

- E**
Emery, James D The definition and computation of a metric on plane curves 25
- F**
Farin, Gerald Piecewise triangular C1 surface strips 45
Farin, Gerald and Barry, Phillip J Link between Bézier and Lagrange curve and surface schemes 525
Fawcett, William H Design knowledge in architectural CAD 83
Ferguson, David R Construction of curves and surfaces using numerical optimization techniques 15
Filip, Daniel J Adaptive subdivision algorithms for a set of Bézier triangles 74
Fletcher, C Yates and McAllister, David F Natural bias approach to shape preserving curves 48
- G**
Gero, John S see Rosenman, Michael A
Goldschmidt, Victor W
 see Maxwell, Gregory M
Greenberg, Donald P
 see Brock, Philip J
Gregory, John A Shape preserving spline interpolation 53
- H**
Hammond, P H Developments in computer-aided control system design 552
Hashimshony, R and Roth, J ALG: a model for generating alternative layout graphs under architectural constraints 431
Hoffmann, Christoph and Hopcroft, John Quadratic blending surfaces 301
Hopcroft, John
 see Hoffmann, Christoph
Hutchinson, Peter J
 see Rosenman, Michael A
- K**
Kaidhom, A A
 see Sheikh Ahmad, A I
Koparkar, P A and Mudur, S P Generation of continuous smooth curves resulting from operations on parametric surface patches 193
Krishnan, D and Patnaik, L M GEODERM: geometric shape design system using an entity-relationship model 207; see also Patnaik, L M
- L**
Laborie, Marc see Aoudja, Ferid
Lasser, Dieter Intersection of parametric surfaces in the Bernstein-Bézier tation 186
Lee, Kunwoo and Tortorelli, Daniel A Computer-aided design of robotic manipulators 139
- M**
Maher, M A C and Mead, C A Modelling and simulation of integrated circuits 472
Mastin, C Wayne Parameterization in grid generation 22
Maxwell, Gregory M, Bailey, Michael J and Goldschmidt, Victor W Calculations of the radiation configuration factor using ray casting 371
McAllister, David F see Fletcher, G Yates
McLeod, R J Y see Baart, M L and also Todd, P H
Mead, C A see Maher, M A C
Meier, Andreas Applying relational database techniques to solid modelling 319
de Montaudouin, Yves, Tiller, Wayne and Vold, Havard Applications of power series in computational geometry 514
Morrell, D R see Nelson, B E
Moss, S D FSL: a fast structured logic design methodology for high speed GaAs digital integrated circuits 478
Mudur, S P see Koparkar, P A
Muroga, S see Bryant, P K
- N**
Nandy, S K and Patnaik, L M Linear time geometrical design rule checker based on quadtree representation of VLSI mask layouts 380
Nelson, B E, Morrell, D R, Read C J and Smith, K F PPL integrated circuit design methodology 481
Ntoko, Nzumbe-Mesape and Cartwright, W G Design of axial turbomachine blade camber surfaces using the Bezier technique 316
- O**
Onwubolu, G C see Richards, T H
Oxman, Rivka see Rosenman, Michael A
- P**
Parry, Scott R see Sederberg, Thomas W
Patel, A see Soong, N
Patnaik, L M see Krishnan, D
Patnaik, L M see Nandy, S K
Patnaik, L M, Shenoy, R S and Krishnan, D Set theoretic operations on polygons using the scan-grid approach 275
Peterson, D P Boundary to constructive solid geometry mappings: a focus on 2D issues 3
Piegls, L Curve fitting algorithm for rough cutting 79
Piegls, L Representation of rational Bézier curves and surfaces by recursive algorithms 361
Polinsky, Alan J see Brock, Philip J
Prayoonrat, Sam see Walton, Doug
Preece, Paul E see Benayoun, Mohammed
- R**
Read, C J see Nelson, B E
Reddi, R and Chen, C Hierarchical timing verification system 467
Richards, T H and Onwubolu, G C Automatic interpretation of engineering drawings for 3D surface representation in CAD 156
- R**
Richards, T H and Onwubolu, G C Linking plate/shell finite-element analysis and engineering drafting by meshed surface modelling 327
Rosenman, Michael A, Gero, John S, Hutchinson, Peter J and Oxman, Rivka Expert systems applications in computer-aided design 546
Roth, J see Hashimshony, R
- S**
Sabin, M A Some negative results in N sided patches 38
Saint-Paul, Andre see Aoudja, Ferid
Sederberg, Thomas W and Parry, Scott R Comparison of three curve intersection algorithms 58
de la Sen, M Computer-aided design for a real-time acceleration of the convergence of adaptive control algorithms 219
Sheikh Ahmad, A I and Kadhom, A A Incremental generalized integrator 424
Shenoy, R S see Patnaik, L M
Siebers, Gregory An introduction to computer graphics 161
Silvka, Rebecca see Brock, Philip J
Smith, K F see Nelson, B E
Soong, N and Patel, A Wirability expert system 497
Staley, Scott M and Anderson, David C Functional specification for CAD databases 132
Storry, D J T see Ball, A A
- T**
Tan, S T and Chan, K C Generation of high order surfaces over arbitrary polyhedral meshes 411
Taylor, Stan see Walton, Doug
Thomas, P R see Brown, A D
Tiller, Wayne see de Montaudouin, Yves
Todd, P H and McLeod, R J Y Numerical estimation of the curvature of surfaces 33
Tortorelli, Daniel A see Lee, Kunwoo
- V**
Valliere, Dave Using CAD macros and languages for productivity on a Unigraphics system 450
Vold, Havard see de Montaudouin, Yves
- W**
Waggoner, Warren N and Anderson, David C Converting standard bivariate polynomials to Bernstein form over arbitrary triangular regions 529
Walton, Doug, Prayoonrat, Sam and Taylor, Stan Computer-aided fatigue analysis 263
van Wijk, Jarke J SML: a solid modelling language 443
Woodward, J R Generating wireframes from set-theoretic solid models by spatial division 307